Seismograph Camp on the King Ranch — *E. M. Schiwetz*

The HUMBLE WAY

JULY-AUGUST, 1953

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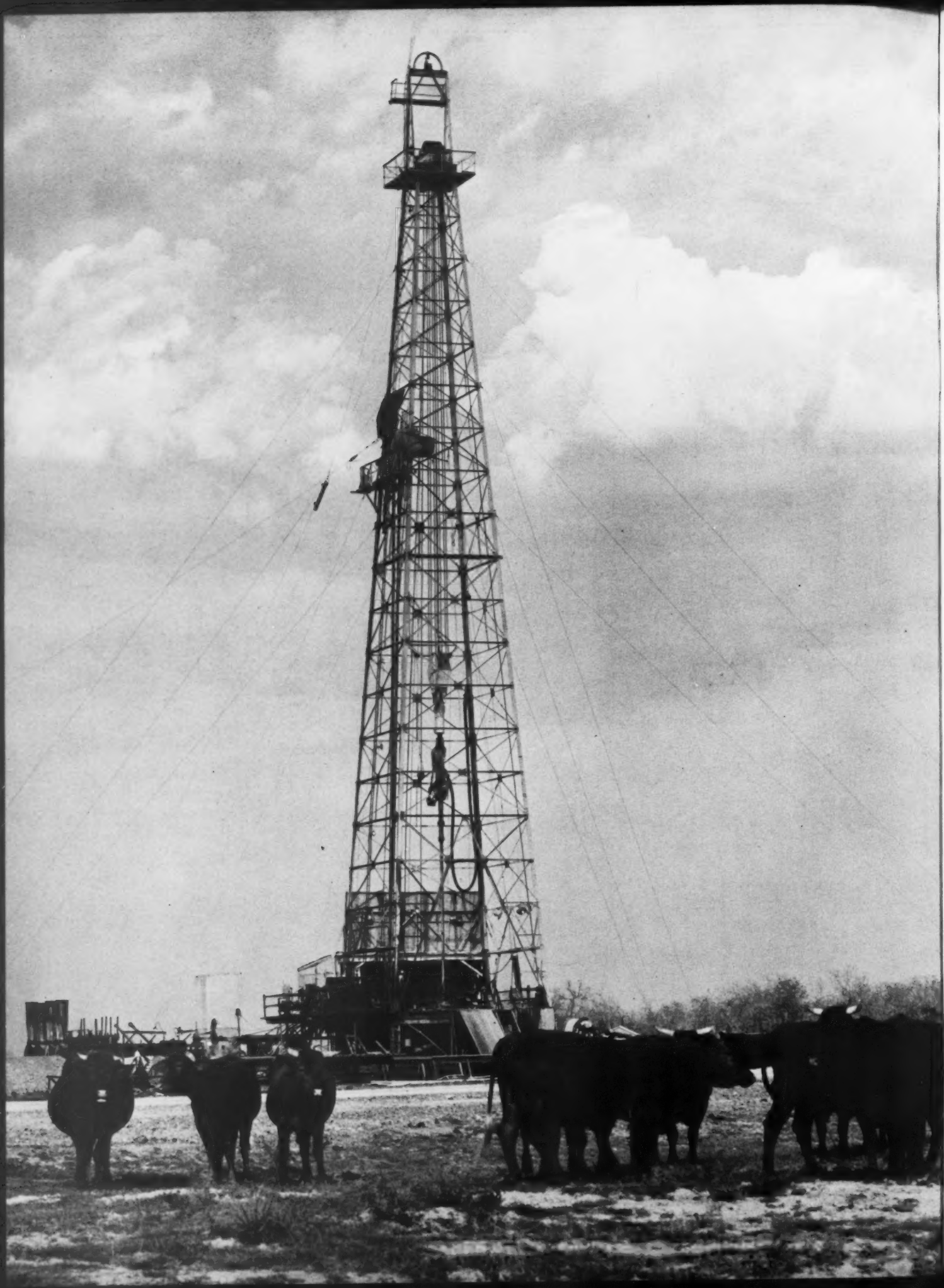


The HUMBLE WAY
JULY-AUGUST, 1953
Vol. IX No. 2

GASOLINE . . . BETTER AND CHEAPER

Today's product not only packs more power than that of earlier years; it also costs less in terms of average hourly earnings

WHAT about the price of gasoline? If someone asked you, would you say that the current price of gasoline is relatively high, relatively low, or just about right? And how many gallons can you buy with an hour's pay today—*more* or *less* than in former years?

You might not have a ready answer, but these are questions of importance to every motorist. For they are questions which touch that most sensitive of barometers—one's pocketbook.

Consider, for instance, these figures:

If yours is a typical family, about two and a half cents out of every dollar you spend goes for gasoline and oil. The average car consumes nearly two gallons of gasoline a day. Out of our national consumption of oil products, 43 per cent is in the form of motor fuel. Every minute of the day, America's 53 million motor vehicles travel a total of more than a million miles.

But a barometer—even one's pocketbook—is not always easy to read. So choppy have been the seas of inflation, so complex the other economic weather brewing at the same time, that few people are aware of a simple fact:

Gasoline today, *in terms of the individual's average earnings,* is far cheaper than it was 10 years ago, or at the depths of the Great Depression, or at any time during the prosperous Twenties!

And this fact holds true despite the price change of last June when, in a much delayed reaction to strong demand and increased costs, gasoline prices edged upward about four per cent or—at retail—from one to one-and-a-half cents a gallon.

A backward glance over the last 30 years reveals the surprising extent to which gasoline has improved its position on the bargain counter. Take, for instance, the average hourly wage in all manufacturing over the past three decades. Here's how much gasoline (tax excluded) this wage would buy at 10-year intervals from 1922 to 1952:

—In 1922 the average wage in manufacturing was 48.7 cents an hour, enough to buy 1.96 gallons of regular gasoline.

—By 1932 wages had dropped to 44.6 cents, but an hour's work was now equivalent to 3.35 gallons.

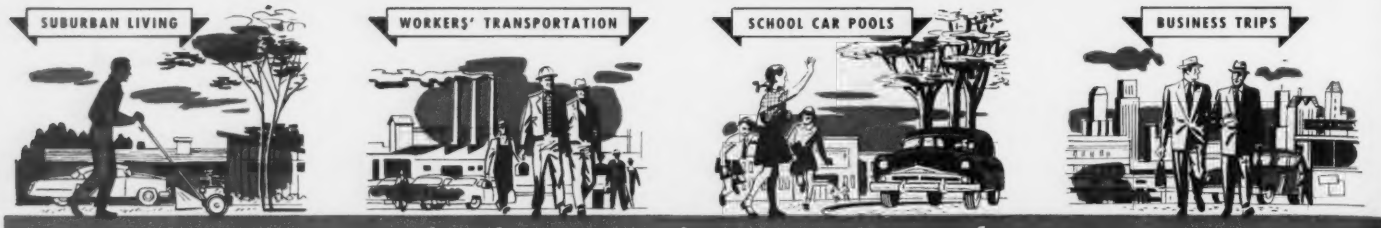
—In 1942, a war year, wages stood at 85.3 cents, and with this you could buy 5.9 gallons.

—In 1952 wages hit a new high of $1.67 an hour. So did the amount of gasoline an hour's work would buy—8.27 gallons.

An hour's work, in brief, would buy more than *four times* as much gasoline (tax excluded) in 1952 as it would in 1922. This ratio is still about the same, the new gasoline prices notwithstanding, since average hourly earnings in May 1953 of $1.75 were higher than a year ago by about the same per cent as the price of gasoline.

It is easier, then, for you to pay the petroleum industry for your gasoline, but what if we include the state and federal taxes? That, of course, is an im-

Unconcerned cattle on King Ranch pay little attention to Humble drilling operation being carried on in their pasture. (See page 9.)



.....expanded use of gasoline has wrought a

portant point for excise taxes on gasoline averaged 7.32 cents a gallon last year—about 25 per cent of the total price you paid. Even with taxes included, however, gasoline has still become remarkably cheaper in terms of one's labor:

In 1922, when there were only small state taxes on gasoline, an hour's work would pay for 1.93 gallons of gasoline, taxes included. In 1932 (a federal tax went on for the first time that year), an hour's work would buy 2.49 gallons; in 1942, 4.18 gallons; and in 1952, 6.07 gallons. The improvement ratio, taxes and all, is still better than three to one.

THESE taxes, incidentally, are big money raisers. In 1952, for example, gasoline and other motor vehicle taxes provided the states with 28.5 per cent of all their tax income. Some of this money helps pay for public schools and other state services, but in the main gasoline taxes are earmarked for the building and upkeep of roads. They are the "toll" you pay for the modern highways on which you drive.

But gasoline has not merely become progressively cheaper in terms of average hourly earnings. It has also, over the last 30 years, been steadily improved in quality.

The octane number of regular, or so-called house brand, gasoline has climbed from about 50 in the mid-Twenties to 78-plus (A.S.T.M. method of rating) at the present time. Two gallons of gasoline, say the scientists, now do the work that three used to do. This means that we can drive a faster, heavier, more powerful car and yet get as good mileage as with the light, slower cars of 25 years ago.

Also available at extra cost (about two cents a gallon) is a premium gasoline made from a more expensive base stock to supply superior anti-knock performance. Premium grades now account for a third of today's gasoline sales. But so constant has been the progress in research and refining that today's regular grade is about equal to the premium quality of 10 years ago.

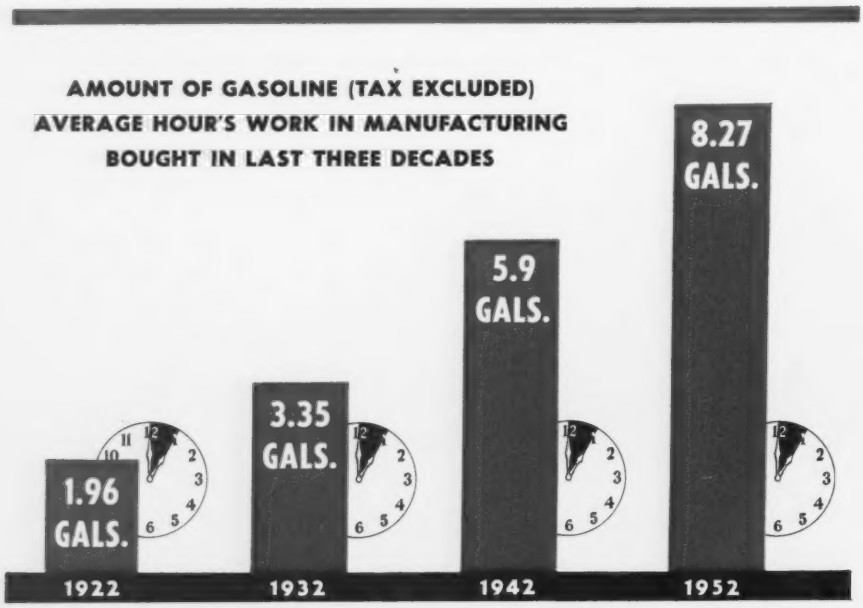
As a shrewd buyer, the American motorist has recognized that better quality and relatively cheaper price make gasoline one of his best buys. Over the years he has stepped up tremendously the amount of gasoline he uses in his automobile. The amount consumed for each passenger car increased from 421 gallons in 1925 to more than 650 gallons in 1952. At the same time, the number of passenger cars more than doubled, soaring from 17 million in 1925 to more than 43 million in 1952.

THIS expanded use of gasoline has wrought a kind of revolution in the American way of life.

In 35 cities, a survey shows, nearly three times as many people travel by automobile as by public transportation. On intercity trips, passenger cars carry an increasing portion of all passengers; two-thirds of overnight business trips are now being made by automobile. Long vacation jaunts have moved within reach of more and more motoring families, a fact confirmed by the great increase in those visiting our national parks and other scenic spots every year.

All in all, gasoline has helped make the daily business of life more pleasant, more convenient. A home in the suburbs is only a few minutes by car from one's downtown job. A church of your choice is within easy driving distance. The weekend fishing trip, car pools for the school children, frequent runs to the grocery or drug store—these and many other facets of our daily life reflect the availability at a fair price of this staple source of mechanical energy.

At a fair price? Use some of the other economic yardsticks, besides that of how much gasoline an hour's work will buy, and you still come up with an emphatic yes. One example: Since 1941, the Consumers Price Index has



a kind of revolution in the American way of life.

climbed 82 per cent. The price of gasoline including taxes has gone up only about 50 per cent.

A remarkable showing, that, and one which compares favorably with the price record of practically any other major industry. It is a showing which indicates that such criticism you may hear about gasoline prices is generally based on old misconceptions—misconceptions which apparently die hard.

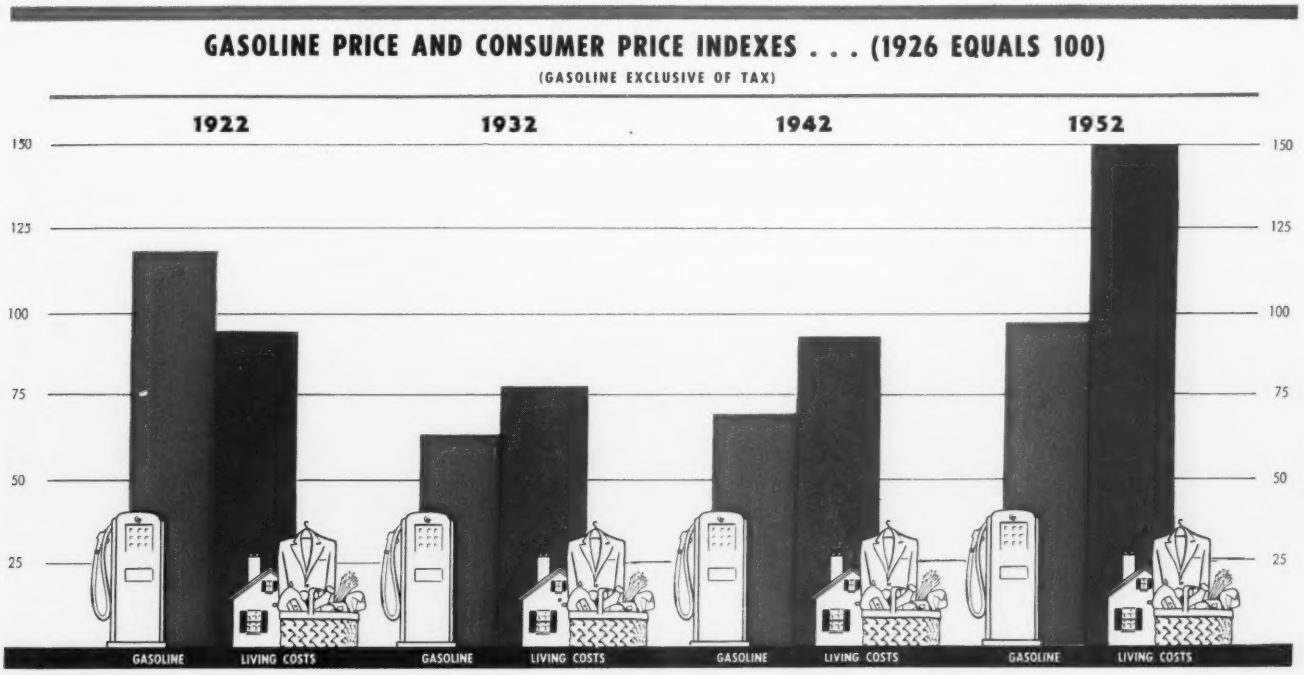
One misconception is that the retail prices of gasoline are set by the oil companies. The fact is that there is no such thing as a list price in the marketing of gasoline. More than 200,000 service stations dot the streets and highways of America, and most of them (19 out of 20) are independent businesses. Their relation to the large companies is only that of any retailer to the company that supplies his merchandise. They can and do vary their mark-ups as they see fit.

Humble's gasoline, for example, is sold at about 2500 service stations in Texas. The Company operates (and hence sets the price) at only 307 of these stations. The other 2200 are operated by dealers to whom Humble sells gasoline at wholesale, and these stations sell at prices which reflect their individual decisions as to the best mark-up.

HUMBLE recently checked the price at which its gasoline was being sold at dealer outlets on a given day. It found a range of 3.5 cents between the high and low prices for its regular gasoline, and a range of 3 cents between the prices of its premium gasoline. On that particular day some dealers were charging 1.5 cents a gallon less for Esso Extra than the price at Company-operated stations, some were charging the same price, and others were charging as much as 1.5 cents a gallon more. At one station Humble's premium gasoline was sold at the price being charged for regular gasoline at some other stations. These price patterns illustrate the type of competition which goes on rather generally.

Another major company checked 265 of its stations and found 28 different prices in effect. This, in fact, is the sort of survey one can make for himself. Drive along a busy thoroughfare in any large city and you will probably find the price of gasoline varying several cents a gallon between the different brands, major and minor. Here is reflected not only price competition, but also competition in service and quality.

This brings us to another misconception: that there is no real competition among the marketers of gasoline. The reverse, of course, is true as every service station man knows. The competition for the motorist's trade is as vigorous and hard-fought as any in the American economy. Humble once ranked fifth in gasoline sales in the



state of Texas. Today, through energetic and continuous competitive effort, it holds first place, accounting for 16 per cent of the state's tax-paid gasoline sales.

SOMETIMES the competition between marketers flares up as a price war. More often, though, it causes the prices of gasolines of similar quality to hover about a common level since those sellers who try to charge more than their competitors soon find their business dropping off.

For the American motorist is the world's most independent customer. Being on wheels, he can choose among a dozen or more stations with little effort on his part. While there is actually a considerable difference in quality between the gasolines he can buy, he will have little difficulty in finding a choice of several brands which will perform satisfactorily in his car. And he usually doesn't mind changing brands if—prices being about the same—he is offered better service or if there is any other apparent advantage to him in doing so.

Since competitive conditions leave little room for price differences between the major brands of gasoline, service and quality have gradually become factors in the struggle for patronage. Dealers have learned that the surest way for them to build and hold a healthy profitable volume is to offer complete service to their customers. The filling station of grandfather's day is now a *service* station where one can get his windshield cleaned, his tires and battery checked, his radiator filled. Clean rest rooms are another part of this free service. As for quality, the motorist knows that while his car might run after a fashion on the cheapest gasoline made, his modern high compression engine requires a fuel that is specially made to give knockless, trouble-free performance.

GASOLINE PRICES AND TAXES*

Year	Price Exc. Tax	Taxes
1922	24.82	.38
1932	13.30	4.63
1942	14.46	5.97
1952	20.24	7.32

*Average (cents per gallon) in fifty representative cities.

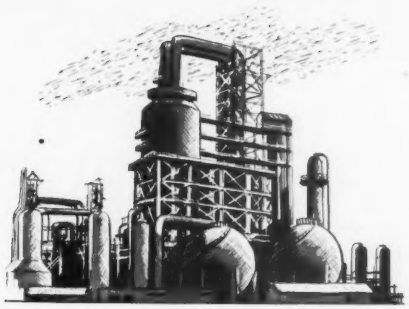
Even in the face of these competitive facts, a related misconception still crops up occasionally—namely, that gasoline prices are pegged at what the traffic will bear. Marketers learned long ago, however, that the highest price doesn't necessarily yield the most profit or the most long-range benefits. Mark-up times *volume* is the important thing, and, as already pointed out, any station will lose business fast if its prices are too far out of line with those of his competitors. Competitive fuels also await a chance to break into the market.

HUMBLE'S President, Hines H. Baker, recently put it this way in a statement to a congressional committee:

"Gasoline is selling . . . far below the price the market would stand . . . (The) steady downward trend in the cost of gasoline relative to the earnings of wage earners is an indication of (this) . . . But for the fact gasoline is sold at such low prices, consumers would also have available supplies from alternative sources, such as shale and coal."

The true test of all prices takes place in the market. When we think a price is too high, we don't buy or we buy as little as possible. When we think the product is a bargain, we increase our purchases. The rapidly increasing use of gasoline is the best evidence that its price looks attractive to American motorists.

Competion for the motorist's trade is vigorous and hard-fought.



MIDYEAR REPORT

HUMBLE stockholders received about the middle of August the following interim report on the Company's operations for the first six months of the year:

Humble's net income in the first half of 1953 was $79,531,700, including $9,255,800 recovered in settlement of claims for refund on overpayment of federal taxes on income for the years 1943 and 1944. This net income amounted to $2.22 a share. Dividend payments for the first six months of 1953 were $1.14 a share, the rate per quarter remaining the same as in 1952.

Operating net income for the first six months of this year, exclusive of the tax refund and net accrued interest thereon, was less than in the same period a year ago even though gross income, crude oil production, and refinery runs were higher. The lower rate of operating profit reflects higher costs which have continued to increase despite constant cost control efforts.

In June 1953 there was an advance in crude oil prices east of California averaging about 25 cents a barrel, the first general increase since December 1947. This adjustment reflects only part of the increase in costs that has occurred in oil exploration and production since 1947, and would have occurred sooner but for government price controls in effect from December 1950 to February 1953.

Humble's net income in the last half of 1953 should improve because of better prices and anticipated higher production. The effect of the higher prices will be partially offset by additional taxes and perhaps increases in other costs. Furthermore, the rate of earnings on invested capital and on the value of the Company's assets will still be less than in some prior years.

Humble's capital expenditures of $74,108,600 in the first half of the year were at about the same rate as in the last half of 1952. There were 529 well completions in this period. The proportion of dry holes was higher than a year ago but about the same as the average in 1952. It is anticipated that the Company's drilling program and expenditures in 1953 will be somewhat less than last year. Total capital expenditures will equal or exceed slightly those of last year.

	1953	1952		
	First Half	First Half	Second Half	Year
FINANCIAL DATA				
Gross Operating Income	$495,979,400	$488,753,900	$486,310,800	$975,064,700
Net Income	79,531,700*	74,992,600	70,299,500	145,292,100
Taxes	41,578,100	35,052,300	30,701,300	65,753,600
Dry Hole Costs	19,165,300	19,294,400	23,770,700	43,065,100
Dividends Paid	40,888,022	40,897,427	40,897,769	81,795,196
Capital Expenditures	74,108,600	85,239,300	75,040,900	160,280,200
Net Income Per Share	$2.22	$2.09	$1.96	$4.05
Dividends Per Share	$1.14	$1.14	$1.14	$2.28
OPERATING VOLUMES—Barrels Daily				
Net Crude Oil Production	364,300	344,600	354,600	349,600
Crude Oil Refined	254,300	245,600	257,500	251,600
Trunk Line Deliveries	680,700	710,500	721,400	716,000
WELLS DRILLED BY HUMBLE				
Producing	394	455	353	808
Dry	135	122	172	294

The interim financial data are subject to change by final audit for the year.

*Includes $9,255,800 recovered in settlement of claims for refund on overpayment of federal taxes on income for years 1943 and 1944 (tax refund of $7,609,900 plus interest of $3,429,100 less taxes thereon of $1,783,200).

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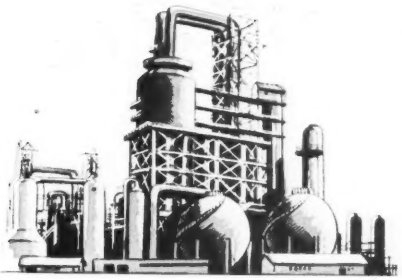

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Smart costumes made of synthetic fibers are modeled against a backdrop of tall towers, source of an ingredient for nylon.

FABRICS from OIL

The clothes you wear today may have come from experiments with an ice cream freezer

THE hardware clerk could hardly believe his ears. Before him one frosty morning in the winter of 1948 stood a Baytown Refinery research man, asking for an ice cream freezer!

A bit chilly for ice cream, the clerk must have mused. But he had learned long ago about the difficulty of accounting for tastes—and a sale was a sale. Rummaging among his out-of-season items in the stockroom, he finally produced a small freezer of the lick-the-dasher type. His customer departed happy.

If the clerk had known how that freezer would be used, he would have thought his customer not merely eccentric, but completely mad. For nothing so prosaic as ice cream was destined to come from that wooden-bucketed side-cranker. Hooked up to a small motor to save elbow-power, it was put to use in early Baytown efforts at producing *paraxylene*.

Paraxylene, pronounced *parra-zy-leen,* is present in small quantities in one of the product streams at Baytown's hydroformer unit—the former Baytown Ordnance Works where toluene was produced for explosives during World War II. Research by others had shown that "Dacron," a new and improved synthetic fiber, could be made from paraxylene and woven into cloth. The oil industry's problem was to produce enough paraxylene to make the cloth-manufacturing process commercially practicable.

THE job was not easy. It resolved into a problem of how to separate paraxylene from its fellow travelers in a mixture of solvent xylenes and certain other materials. The xylenes are a close-knit family of para-, ortho-, and meta-xylene, each sticking tenaciously to the other two, as inseparable as the Three Musketeers. Only drastic means could drive them apart.

Baytown research men went to work. They cajoled and coaxed at the solvent xylenes mixture, seeking some way to lure the reluctant para- away from the family. They tried to boil it off. They tried with chemicals to pry loose its hold. In the end, only a "freeze-out" tactic worked well. And that's where the ice cream freezer came in.

Knowing that paraxylene is colder-natured than its brethren, men assigned to the project poured up a freezer canful of solvent xylenes and packed dry ice around it. Then they turned the crank until ice formed in tiny crystals in the oil mixture, like sugar in a glass of lemonade. Those crystals were paraxylene in pure form; the ortho- and meta- types remained liquid. At last the Gordian knot had been cut, or rather frozen, in two.

There was still much work to do. After more detailed research in a pilot

Operator scoops up a sample of frozen paraxylene, a raw material for Dacron.

unit built for that work, a full-scale plant unit was designed. This unit went into operation at Baytown on May 1 of this year, producing paraxylene in volume. Capacity of the plant will be 31 million pounds a year—and a pound of paraxylene makes a pound of Dacron.

DACRON lives up to the claims made for it. One Humble research executive found that out for himself, first-hand. On a trip to New York, he bought a mixed Dacron-and-wool suit (some suits are all-Dacron, but mixtures are more generally sold).

Some four months after he bought it—it had not been pressed in the meantime—a waiter tripped awkwardly at dinner, sloshing gravy on the new suit. Going immediately to his hotel room, the embarrassed man removed his new suit and washed it in the bathtub, then hung it in the closet. Next morning, the suit was good as new, its crease as sharp as ever!

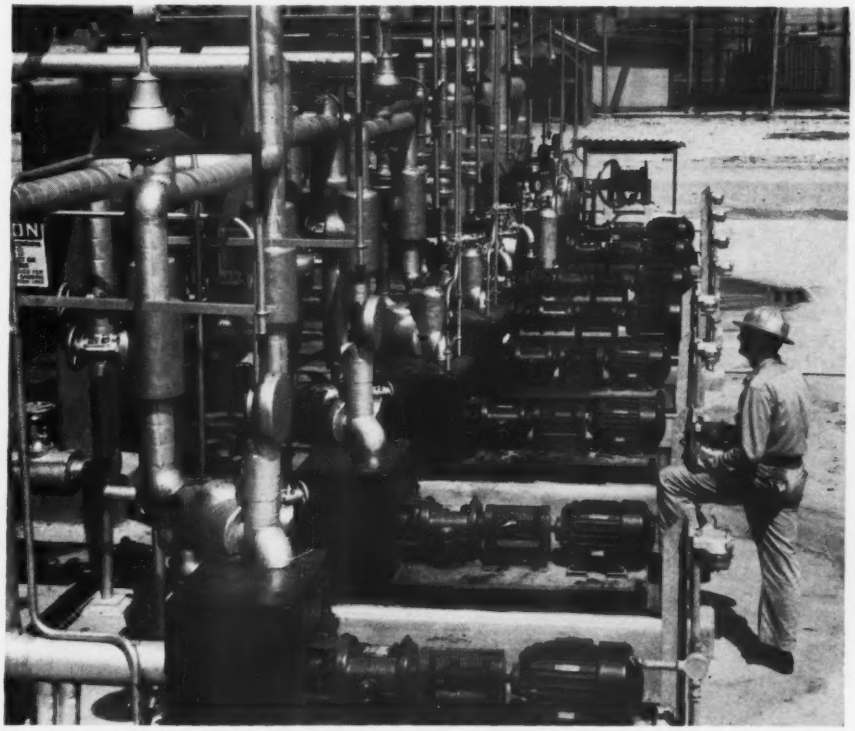
Suits and dresses you can clean in your washing machine at home without losing creases and pleats are by no means the only uses of Dacron. It is now possible for the whole family to dress from head to foot in Dacron fabrics: shirts, suits, hose, neckties, blouses, skirts, underthings, even accessories.

Like nylon, Dacron dries quickly. That is because its fibers do not absorb water; moisture merely gathers on the *outside* of the fiber and is soon evaporated. Such non-absorbent quality made the fiber hard to dye, but that problem was eventually licked.

Marketing Dacron, with its wide consumer appeal, has been accompanied by some dramatic bits of salesmanship. The sales head of one metropolitan men's store, it is reported, puts on this show for callers at his office: Seizing a pair of all-Dacron trousers, he proceeds calmly to slosh them with ink, annoint them with iodine, and splash them finally with a messy glob of catsup.

This done, he takes the whole unsightly thing across the office to his washroom, where he dunks the trousers into warm water and detergent. After washing, he hangs up the trousers by the cuff and suggests a bite of lunch to his thoroughly astonished visitor. An after-lunch inspection shows the trousers to be nearly dry, quite clean, and the press razor-sharp.

From oil refinery to milady's finery—that is the big jump made in recent years by some of Humble's products. Humble now makes raw materials for nylon and Dacron.



This small battery of circulating pumps helps feed the icy maw of Humble's new paraxylene unit, one of three in nation producing the basic ingredient for Dacron.

Dacron even gets Broadway billing these days. In the play, "Wish You Were Here," one of the actors wears a Dacron suit. During each show, the fellow gets a dunking, fully clothed, into a swimming pool. His suit holds up beautifully under the rough treatment. It dries out between performances, and the actor wears it for show after show without pressing.

LONG before Baytown Refinery made paraxylene for Dacron, it was supplying *cyclohexane* for nylon. Cyclohexane, another oil material with a long name, is produced by closely controlled distillation at a Baytown unit. Main products of this unit go into high quality aviation gasolines, but several days a month are set aside exclusively for cyclohexane production.

Laboratory people have no trouble telling when the unit is making cyclohexane. For sorting out the material from other components in the oil stream is tricky business, calling for very close control. Temperatures must not vary so much as one degree, or the product will be "off test." Frequent laboratory tests must be made, checking for purity, while the run is in progress.

Finished cyclohexane, a clear liquid like paraxylene, is the principal ingredient of the nylon salt from which nylon fiber is spun, then woven into fabric.

To the average consumer, nylon means hosiery and other clothing. Actually, only a part of the total fiber goes into those goods. Today, it finds increasing use in everything from shoes to ships.

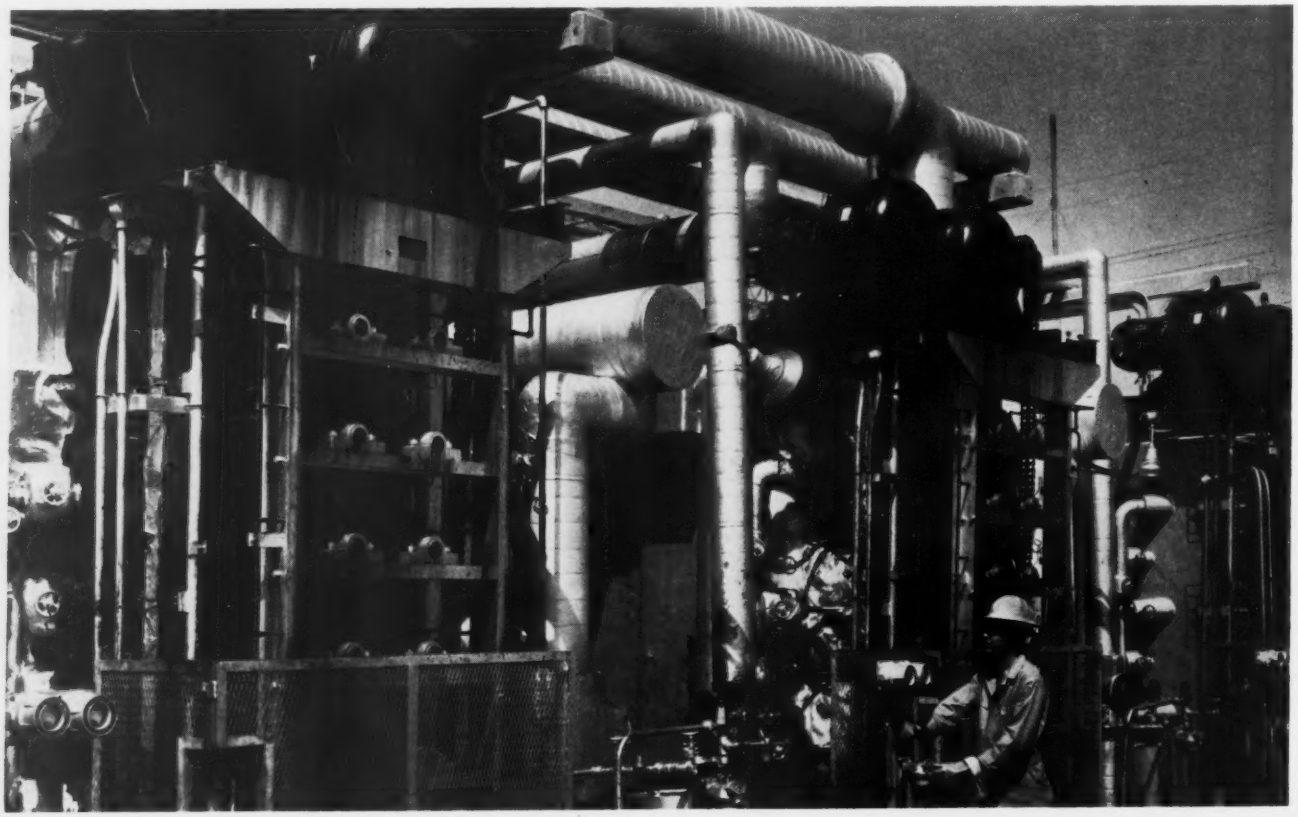
Cordage users find it an answer to their prayers. Nylon cord strengthens automobile tires. Ropes of nylon tow sinking ships to safe harbor. Whalers use it for harpoon lines, and let the whale pull its worst. All across the Seven Seas, nylon endears itself to the seafaring heart by its great strength, its stretch without breaking, and its resistance to water.

Even the Western cowboy has yielded to the advantages offered by nylon. Lariats made from it were first thought too light, and weighting materials had to be added. Now, though, cowpokes on ranch trails and at roundup time have learned to take their nylon straight, without weighting.

NYLON makes motoring safer, too. With heavier loads and higher speeds of today's trucks and vehicles, nylon cord in the tire is an extra measure of safety and longer life. One magazine reports this year that "As of this date, there is no record of such a tire (reinforced with nylon) having blown out from impact." Even so, nylon must look to its laurels, or Dacron may take over as tire reinforcement fiber.

Though Humble's contributions to the synthetic fiber industry may be interesting and tinged with drama, they account for only a tiny portion of total refinery production. Actually, about one-third of one per cent of the refinery's total runs finds its way into Dacron and nylon. The other 99⅔ per cent continues to find use in oil products which help heat the nation and keep it mobile.

This complex array of pipes, valves and pumps is an industrial version of a freezer. It provides the low temperatures needed to separate paraxylene from its fellow xylenes. Baytown's new paraxylene unit has a capacity of 31 million pounds a year.



King Ranch "Big House," Santa Gertrudis Division *by E. M. Schiwetz*

THE KING RANCH

IT IS an impressive land, this King Ranch, an intriguing land where a keen brush eye and a good roping arm still rank high among the manly arts.

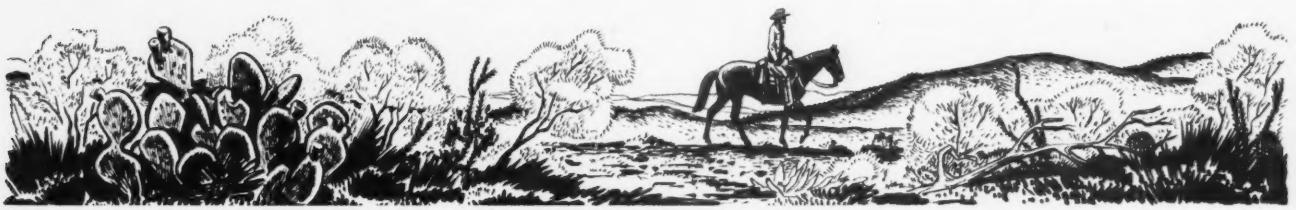
No hills worthy of the name break the flat expanses of the Ranch. For miles around, all is smooth and level. Most of the trees seem small and scattered, except where thickset jungles of *mesquite* hold tangled sway, or where occasional motts, or clumps, of fine oaks give welcome shade and shelter from the blazing sun. Here, deer and wild turkeys roam free, well protected and almost as unconcerned by the presence of man as animals in a zoo.

In clear places flow shallow seas of waving grass. Acre after acre bristles with broad-leafed cactus which grows in such close-knit profusion that only small game can penetrate its thorny domain. Patches of wiry, shin-high *zacahuistle* offer cover for sluggish rattlesnakes, the *vibora* so dreaded by the native cowboys, or *vaqueros*.

Over the ranch from dawn to dusk blows a Gulf breeze from the southeast. Soft, seldom violent, it brushes the land with a gentle hand, billowing the grass on the plains. Grateful for the breeze, cherry-red Santa Gertrudis beef cattle bearing the "running W" brand of the King Ranch rest in patches of shade. For this is one vast beef factory, a land once aptly called "a country made by cattle, of cattle, and for cattle."

To this land, exactly one hundred years ago, in what was still a time of wooden ships and iron men, came Capt. Richard King. New York born, Capt. King after the Mexican War had entered into a partnership with his friend, Mifflin Kennedy, to buy and operate steamboats on the Rio Grande, plying between Brownsville and upriver ports.

For all his life on water, Capt. King's ambitions lay on land. It was his dream to found a ranch in the southern tip of Texas, and transform grass into beef. As early as 1852, he rode northward from the Rio Grande across plains and grasslands, looking over the vast stretches and choosing at last a tract of land in the bend of a running stream called Santa Gertrudis Creek, some 120 miles north of Brownsville and about 50 miles southwest of Corpus Christi. That was the beginning of the great King Ranch.



Tank Battery Scene *by E. M. Schiwetz*

OIL ON THE KING RANCH

Celebrating its 100th anniversary this year, the King Ranch produces an imposing combination of oil and gas, wild game, its own purebred beef cattle, and champion thoroughbreds.

THE King Ranch of Southwest Texas is one of those oil-producing areas that proves oilmen right in following the adage, "If at first you don't succeed, try, try again." The ranch, a ranking beef producer for the past 100 years, began its career as an oil producer in 1939—exactly 20 years after Humble leased its acres for the first time!

The Company took its first lease on the King Ranch in 1919 and proceeded, during the early twenties, to drill several shallow wildcat wells and make extensive core tests. In 1924, a contract seismograph crew began to explore a portion of the ranch for Humble, searching for likely prospects that might lie beneath the broad stretches of grasslands, mesquite brush, and cactus.

That first venture failed. Nothing came of it but a small amount of oil from one well drilled as an extension of the previously discovered Kingsville field. After so little promise of success, Humble began about 1926 to surrender its King Ranch leases.

But there were those who never gave up hope of finding oil on the ranch. In 1933, Humble leased the King Ranch for the second time, taking more than a million acres. Two years later, the ranch was partitioned in accordance with the will of Mrs. Henrietta M. King, wife of the founder, who had died in 1925 and had stipulated in her will that the ranch remain intact for ten years after her death.

The western portion of the Norias Division was partitioned to Richard King and became known as the Santa Fe Ranch. The El Sauz (Spanish for "willow") Division in Willacy County was partitioned to the Atwood family. The remainder was incorporated and called King Ranch, Inc. All

leases held by Humble remained unaffected by the partitioning; it merely meant that a separate accounting for royalties would be made on any oil and gas which might be produced from the now-separate ranches.

Exploration on the Ranch

After taking leases in 1933, Humble spent the next six years carrying on a comprehensive program of exploration before a well was drilled. This time, the land was explored intensively with all types of equipment—the torsion balance, the gravity meter, the core drill, and the seismograph.

Torsion balance is a method of exploration that measures differences in the pull of gravity on underground structures. It was used first, but was soon replaced with the gravity meter, a new and greatly improved device for doing the same kind of work.

Core drilling consisted of taking samples, or cores, from underground formations at relatively shallow depths. This work began on the ranch about 1936 and continued for the next 10 or 12 years.

In 1938, Humble sent a seismograph crew of some 20 men to the King Ranch, and exploratory work of this nature is still in progress there. In seismograph exploration, a small charge of dynamite is exploded in a shallow hole drilled for that purpose every 1200 to 1500 feet. The explosion creates an artificial earthquake whose vibrations are recorded on photographic film. Geophysicists study and interpret these vibration patterns to determine what structures may lie below.

During the past 15 years or so, virtually all acreage under lease on the King Ranch has been "shot" with the seismograph. An exploration crew, using improved equipment and new techniques, is now going back over the ranch, taking a second look at some areas which seemed promising during the first round of seismograph work.

Development of Proved Fields

Before Humble began any wildcat drilling following its second entry into the King Ranch, several fields discovered by other operators extended onto the ranch. The work of drilling in these extensions on ranch property occupied Humble rigs for the next several years.

In May of 1939, the Company completed its first well as an oil producer in the Colorado field of Jim Hogg County. Excluding the small oil producer drilled in the old Kingsville field in 1923, the Colorado well was Humble's first on the King Ranch.

The second well came closely after the first, but on a different part of the ranch. In September of 1939, a producer was drilled in the Luby field of Nueces County, a small portion of which extended onto the northeastern part of the ranch.

Two years later, in 1941, Humble completed its King Ranch-Paso Ancho No. 1, the Company's first well in the Stratton field, near Kingsville. The following year, a number of wells were completed in the Seeligson field, southwest of the Stratton field. Also in 1942, Humble completed its first producer in the West Stratton field.

In 1944, moving southward, Humble began to develop the extreme southern end of the ranch in the Willamar field of Willacy County (in what had become the El Sauz Ranch). Here, another oil field discovered by others extended onto the ranch. Also in 1944, development of the ranch's part of the Tijerina-Canales-Blucher field began, with the first well completed in January, 1945.

By that time, Humble was ready to begin its wildcat drilling program on the King Ranch.

Exploratory Drilling

Humble drilled its first wildcat well on the King Ranch in 1945, just 12 years after the land had been leased for the second time in 1933.

That first wildcat discovered the Borregas field, rated at that time as the most important discovery in Southwest Texas in eight years. The Borregas field, which lies between the Stratton and Seeligson fields, was unlike other King Ranch fields in one important respect: it lay entirely within ranch boundaries. It has since proved to be a major field.

The second wildcat, also drilled in 1945, brought in what has proved so far to be a one-well field. This was in the Monte Negra (or Motas Negras) area southwest of production in the Stratton field. The well has flowed only a very small amount of oil, and two other wells drilled there—one in 1946, one in 1947—were dry holes.

A King Ranch Camphouse *by E. M. Schiwetz*

Two wildcat wells were drilled on the El Sauz Division during 1946. Both were dry holes. As if to offset that disappointment, drilling elsewhere in proved fields on the ranch found new oil sands. These discoveries continued during 1947, although no new fields were discovered on the ranch during that year. Three more wildcats on the El Sauz Division were dry holes.

Activity during 1948 followed the generally disappointing pattern set by the two preceding years. Increased wildcat drilling during 1948 discovered shallow gas sands in the Boedecker area of eastern Brooks County. Oil and gas were also discovered that year at West Borregas and on the Santa Fe Ranch. But these discoveries proved of only minor significance. In all during the year, eight dry wildcat wells were drilled. One of them, the Sauz Ranch-Tenerias No. 3, went down to 13,509 feet, a record for Humble operations in the Southwest Texas Division.

During 1949 six wildcat wells resulted in three gas discoveries, one a major field. That was the Viboras field in Brooks County. Subsequent drilling of the Viboras indicates it is a promising gas field, but so far only two small oil producers have been completed there. Limits of the field have not yet been fully defined, but the structure is indicated to lie entirely within the King Ranch. The other two gas

Humble Headquarters, Scott & Hopper District

by E. M. Schiwetz

fields discovered in 1949 were the South Santa Fe and the Laguna Larga.

Exploratory drilling discovered two more fields on the King Ranch in 1950. These were the Julian field in southwestern Kenedy County and the Canelo field, seven miles west and slightly south of Riviera in Kleberg County. No oil has been found in the Julian field, but the discovery well produced condensate at a high rate. Three other wells drilled there resulted in two dry holes and one gas well. The Canelo field has proved to be one of minor significance. Three wildcats drilled there during 1951 were dry holes.

No oil or gas fields were discovered on the King Ranch in 1951. One, the Calandria gas field, was discovered in 1952, but a second well drilled there was a dry hole.

Wildcatting Complicated and Expensive

Wildcat drilling on the King Ranch is complicated by the large area involved. Successful wildcatting must make use of subsurface information that can be gained from the mistakes and dry holes as well as the producers drilled by all operators. On the King Ranch there are no other operators; all exploratory drilling information must come from Humble's wells alone. This complicates and increases the difficulty of finding oil and gas. On the other hand, it enables better planning and less interference with ranch operations.

At the end of 1951, a total of 32 wildcat wells had been drilled on King Ranch leases. Of these, 21 were dry holes, six produced oil, and five were completed as gas wells.

Of the five oil fields discovered by Humble on the ranch, only one—the Borregas—is of major importance at present. All others—the Monte Negra, Santa Fe, South Santa Fe, and Canelo—have been of limited importance.

Four of the discovered gas fields—the Viboras, West Borregas, Laguna Larga, and Julian—may prove to be important. The other two—the Boedecker and Calandria—are probably small productive areas.

Drilling and Production

Drilling on the King Ranch ranges from about 3,000 feet below the surface in the Colorado field to below 13,000 feet in the Sauz Ranch-Tenerias area. High pressures make it necessary to use heavy muds for drilling—muds weighing from nine to 18½ pounds per gallon.

The R. J. Kleberg, Jr., Trustee, Zacahuistle Pasture No. 1 well on the Encino Division was completed in the Vicksburg gas sand at approximately 11,500 feet with a shut-in tubing pressure of 8,050 pounds per square inch. This was 1300 pounds greater than any previously measured tubing pressure in a Humble well.

Producing wells range from shallow pumping, low-capacity wells in the Colorado field to wells that could, if they were allowed to, flow almost 300 barrels per day through a small choke. Reservoir occurrence varies from a single reservoir in the Colorado field to a total of 49 reservoirs underlying various portions of the Seeligson field.

Since oil was first produced from the Colorado field on the ranch in 1939, there have been at all times no fewer than two and as many as 16 drilling rigs in operation on the ranch.

Problems Peculiar to King Ranch

It is unlikely that development of any single oil lease has ever met with the variety of problems that Humble has had in its operations on the King Ranch.

Topography of the ranch ranges from marshes adjoining bodies of salt water to rich, black farm-land. Between these two extremes are densely wooded mesquite areas, smooth rolling grasslands, desert-like sand dunes, fresh water lakes, live oak and shin oak country, and soils and vegetation of other natures. Visualize this by realizing that three drilling rigs can be operating on the King Ranch with each being 75 to more than 100 miles apart!

Marsh buggies or amphibious jeeps called "weasels" may be required in preparing some drilling locations. Other locations may fall in sand dunes 50 feet high and many acres wide. Or they may fall in a perfectly dry flat that might overnight become a lake two or three feet deep.

If the location is in a live oak mott, clearing is held to a minimum and no very large oak trees are disturbed, so that refuge for wild game can remain as natural as possible.

If the location falls in heavy mesquite, as it frequently does, it must be cleared with a bulldozer and the roots plowed up to prevent regrowth of running mesquite.

A wildcat location may require construction of a road 15 miles long, probably built of caliche or clay. Many of the frequently used roads are hard-topped, and hundreds of miles of them have been built by Humble and the ranch jointly.

Each fence crossing inside the ranch has been equipped with a "bump gate" or "push gate" which a driver can go through without getting out of his car and which closes itself afterward. These are used instead of cattle guards to minimize the danger of injuring thoroughbred horses or purebred cattle.

Some roads have to be elevated to prevent inundation during heavy rains. Travel on all roads is done carefully to avoid injuring or killing the ranch's livestock and wild game.

Gas Conservation

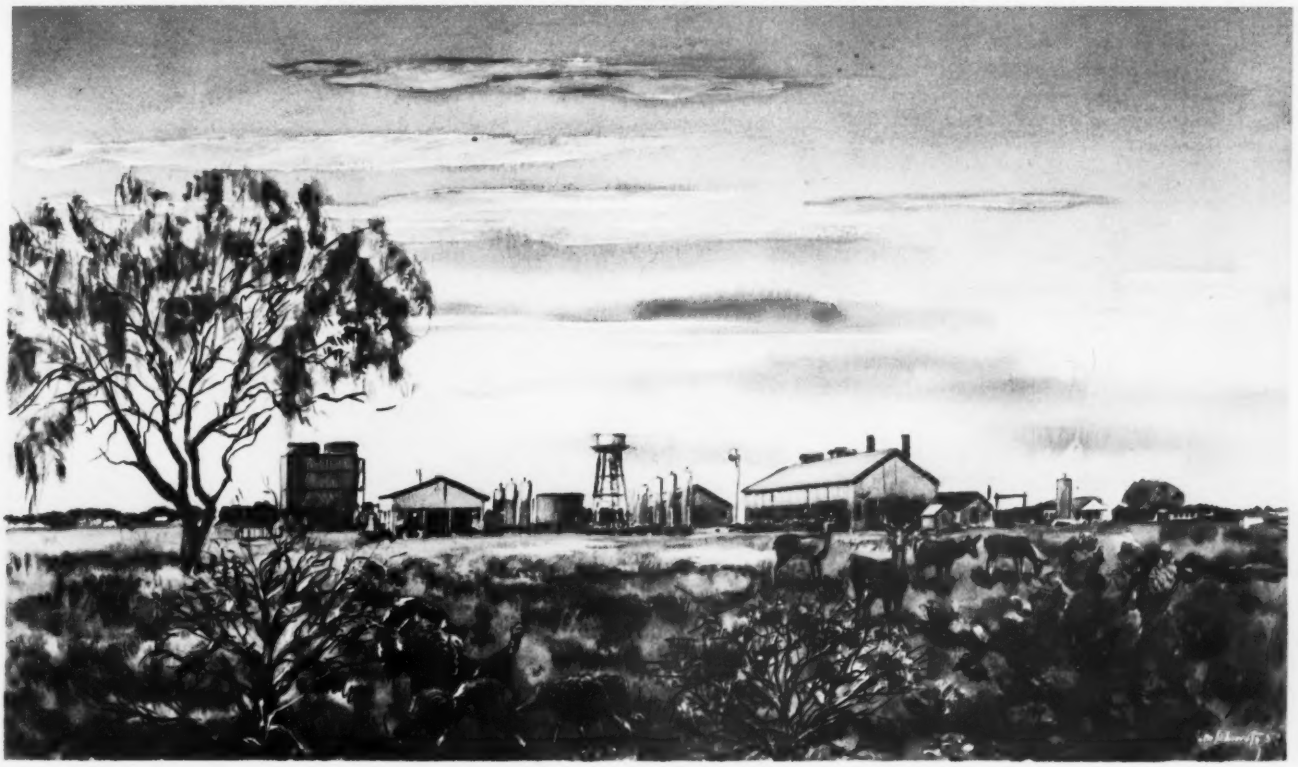
Both the King Ranch and Humble have been leaders in conservation, the former in connection with the land, wildlife, cattle, horses, etc.; the latter in connection with oil and gas. As a result, it is natural that they should work harmoniously together. The Company has kept the idea of conservation constantly in mind in all of its drilling and producing operations, thus assuring efficient development and production and the greatest ultimate recovery of oil and gas.

Early in the development of the King Ranch leases the importance of casinghead gas conservation was recognized and steps were taken to conserve this gas.

During 1945 a gas-gathering system was built to utilize Seeligson and Tijerina-Canales separator gas for rig and lease fuel. This system was later extended to the Borregas and Stratton fields. When the Texas Railroad Commission issued a no-flare order for April, 1947, prohibiting production of oil in the Seeligson field unless the gas produced with that oil was utilized for legal purposes, Humble was in a position to comply with the order.

A year later, in 1948, a similar order was issued for the Tijerina-Canales field. Humble complied by installing a portable compressor which returned casinghead gas to the producing formation.

Gas compressor plants have been built in the Seeligson and Stratton fields for compressing and returning gas to formations in those fields. Casinghead gas from the Willamar and Luby fields is processed through gasoline plants oper-



Gas Conservation on King Ranch *by E. M. Schiwetz*

ated by other companies, then returned to the reservoirs.

In the Stratton area, five reservoirs in three fields are operated under a net gas-oil ratio ruling which permits production of high gas-oil ratio wells at the full allowable rate so long as the produced gas is returned to the reservoir from which it is produced. This allows production of about 2100 barrels of oil daily that otherwise could not be produced.

In the Seeligson and Stratton fields, gas cycling operations are being carried on where the high pressure gas wells are produced, the condensate removed, and the dry gas is returned to the reservoir.

In the Colorado field, salt water is being returned to the producing reservoir on an experimental basis in an effort to increase ultimate recovery of oil. This operation is called "water flooding."

Current King Ranch Operations

Humble's current operations on the King Ranch are supervised by four headquarters districts: Stratton, Colorado, Scott & Hopper, and Willamar. More than 400 employees work in the four districts.

The Colorado District in Jim Hogg County was the first district headquarters to be established by Humble on the King Ranch. It was established there in 1940, following the initial drilling in 1939 under supervision of the Kelsey District. At present, some 23 Humble employees are working in the Colorado District.

The district supervises the small San Pablo and Armstrong fields located off the King Ranch, in addition to that portion of the Colorado field lying on the ranch. Drilling operations have not been particularly heavy in this area during recent years. A pilot water flooding operation is now being conducted in the Colorado Field there to evaluate this means of secondary recovery.

The Stratton District has its headquarters in the Stratton field, near Kingsville. It supervises operations in the Stratton, Borregas, Seeligson, Tijerina-Canales-Blucher, Monte Negra, Luby, Kingsville, West Borregas, Laguna Larga, Canelo, and West Bishop fields on the King Ranch. Fields off the ranch also under Stratton supervision are the Brownlee, North Magnolia City, Rita, Sarita, El Paistle, and Mifflin fields.

In addition to production, Stratton supervises two gas compressor plants to eliminate flaring of gas from Humble wells in the Tijerina-Canales-Blucher, Seeligson, Borregas, and Stratton fields. Gas is returned to the producing reservoirs.

Operations in the Stratton District require 249 Production Department employees engaged in drilling and production operations. A great deal of remedial work has to be done on wells in the district. Multi-sand conditions prevail, and the presence of numerous sands which frequently lens out, plus the complexity of faulted structures throughout the field, make analyses of recompletions difficult.

The Scott & Hopper District was established in 1944, primarily to supervise operations on the Scott & Hopper, Rachal, and Sullivan ranches. When wildcat operations began on the Encino Division of the King Ranch in 1948, the district began to supervise those operations. In that year, also, the district took on the job of supervising operations on the Santa Fe Ranch.

Clearing Out Mesquite *by E. M. Schiwetz*

King Ranch fields in the Scott & Hopper district are the inactive Boedecker gas field, the Santa Fe and Julian gas fields, the South Santa Fe field (a 1949 oil discovery), and the Viboras field, a 1949 gas discovery. A small amount of oil was discovered in the Viboras field in 1950, but not enough to be significant. At the present, there are 56 employees in the district.

The Willamar District, also established in 1944, is near Raymondville in Willacy County. This district supervises only Humble's operations in the King Ranch part of the Willamar field.

Beginning with 26 persons in 1944, the number of employees rose to 111 by the end of 1946. As drilling was reduced, personnel was transferred accordingly, and at present there are 77 employees in the Willamar District.

Pressure maintenance by gas injection was begun at Willamar on August 1, 1951, by operators in the field. Humble injects a large amount of that gas on its Sauz Ranch lease.

Cooperation

As it does with all landowners, Humble is careful on the King Ranch to carry on operations in such way as to protect ranch property. Humble and ranch officials have worked together to design and build roads that would best serve the purposes of both parties.

Guards built around "Christmas trees" of flowing wells were altered to suit the best interests of the ranch. Normally, such guards are built of angle iron, but it was feared that edges and sharp corners might—on some locations—injure prize livestock. The ranch designed, and Humble built, a special guard of smooth, round pipe to prevent injury.

In the earliest years of operation, a valuable mare broke her leg going over a cattle-guard and had to be destroyed. Humble forthwith removed cattleguards through fences and replaced them with bump-gates, which open on a push from the front bumper of an automobile and close themselves when the car has gone through. Whenever Humble people spot a fence break, or a section that appears in need of repair, they either mend it themselves (if it is a simple job) or report it immediately to ranch officials.

Preservation and protection of wild game on the ranch is a matter of as much interest to Humble people employed there as it is to ranch personnel. The King Ranch is understandably proud of its game, and goes to much effort and expense to protect and preserve it. There are several game preserves on the ranch, with deer and turkeys being shipped from the ranch to other areas throughout the nation. Humble takes care that neither the game, its food, nor its cover is mistreated or destroyed.

For its part, the King Ranch has from the very first demonstrated a warm and sympathetic understanding of Humble's problems connected with oil and gas operations on the ranch. A most cordial relationship exists; faith and confidence between the two parties have grown with years of experience. This was demonstrated in one of the earliest meetings between Humble and King Ranch owners. One of the latter is said to have remarked at that time: "We are ranchers; not oil men. You run the oil business here, and we'll run the ranch."

It is that attitude which prompts Humble men concerned with King Ranch operations to describe the producer-landowner relationship as "one of the most pleasant we have ever known."

Sitting on a Well

THE young man is roused from his bed in the middle of the night. He drives long lonesome miles over highways and mountain roads. After an hour or more he rounds a bend and sees a cluster of lights in the valley below.

In the lighted area men have been lounging quietly, awaiting his arrival. They watch him as he comes forward with his "little black bag." They know that with his bag of instruments and with his experience and knowledge he will soon have the "patient" active again.

No. He's not a country doctor. But he's the nearest thing to one in the oil business. He's a production geologist. His patient is often a wildcat well—a test for oil in a new and unproven area—and his the responsibility to prescribe its drilling program, to chart its clinical record in detail, and to advise the drilling crew on its daily treatment.

Should they drill ahead? Or core, or run an electric log of formations below? Or perhaps make a drill-stem test? After examining evidence from the bottom of the well under microscope and ultra-violet lamp, possibly in a small field laboratory but more likely on the hood of his auto, he will give the answer.

Just as the doctor's time belongs to his patients, so the production geologist's time belongs to his wells. Weather, distance, and rest matter little—he is on call at all hours.

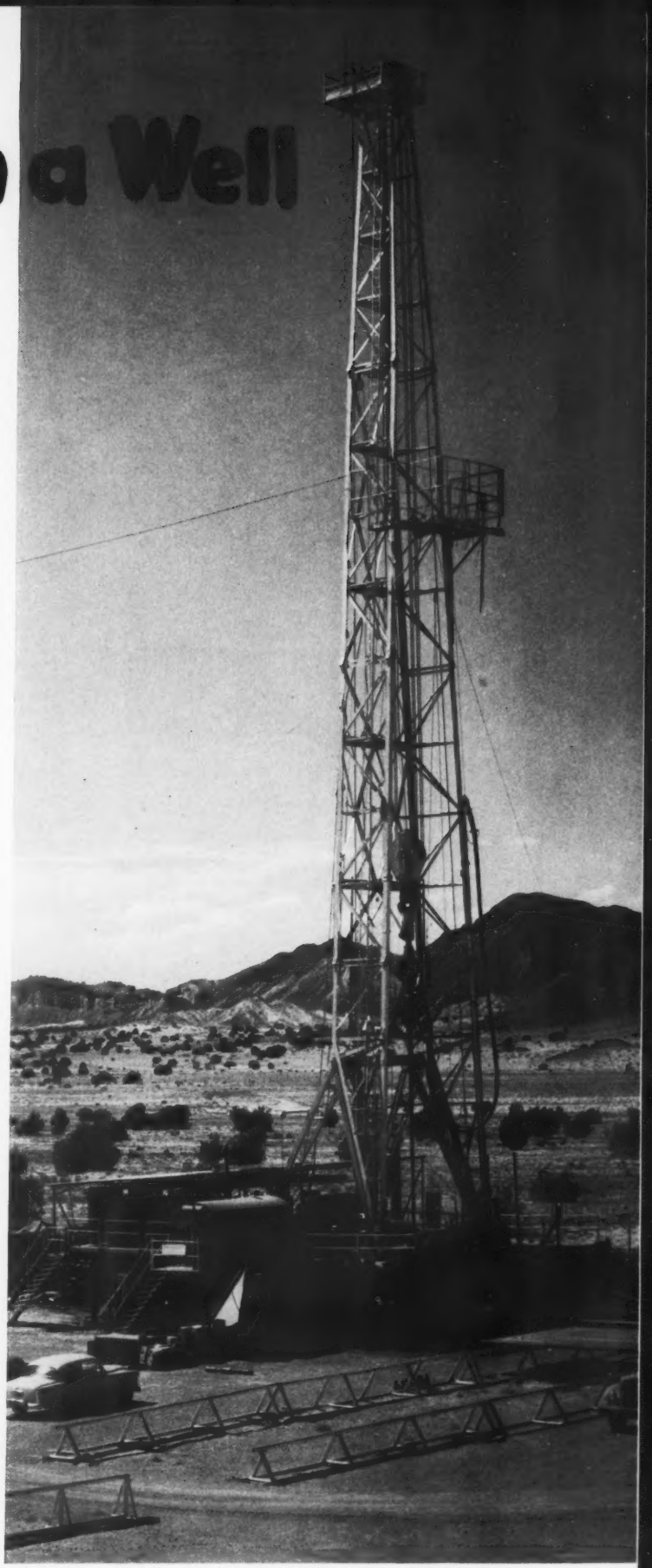
But it is seldom necessary to call him to a wildcat well—he is usually there. He spends so much of his time this way, in fact, that if you inquire of his whereabouts, you will probably be told he is "sitting on a well."

His close attention to a test well is necessary. In case of a dry hole, his careful subsurface records represent the only gain, possibly pointing to later success in the area or region. In case of an oil or gas well, his records are a guide for development of the new field.

In the old days, "well sitting"—living with the well to its completion—was the production geologist's main duty. Today, however, he is much more than a well sitter. Truly a geological planner, his responsibility only *begins* with the drilling of wells. As a member of a team with the petroleum engineer, it extends to the orderly development of fields and the care and treatment of producing wells throughout their life. His concern ends only with the recovery of the last possible barrel of oil.

Each of Humble's production geologists is usually assigned to a specific district or area, and is responsible for geology in connection with all drilling and production activities in that territory. He plays the vital role of liaison between co-operative partners—the Exploration Department, which finds, charts, evaluates and plans the drilling of subsurface structures; and the Production Department, which drills, maintains, and produces wells.

Pictures on the following pages show some of the activities of the production geologist "sitting on a well."



Rank wildcats like this, in an untested area of New Mexico, yield first positive information on what lies below. Geologist "sits on well," sifts evidence from drill cuttings, cores, well logs.

Production geologist lives, eats and often sleeps with his well

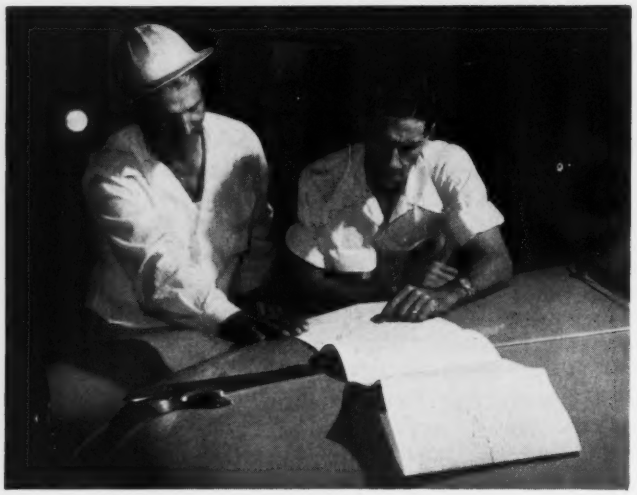
TYPICAL of Humble's production geologists and their important role on every well drilled is W. L. Jordan of the Company's Albuquerque, New Mexico, office.

Not at all typical, however, is the well he has been "sitting on" for the past several months. In a lonely location west of Los Lunas, New Mexico, nearer to the ruins of an Indian pueblo than to civilization, it is a test of an unknown area.

Because of its remoteness, Jordan is assigned to this well only, though production geologists usually watch over several. Here he lives, eats, and often sleeps; here he studies every foot of downward progress for answers to geologic mysteries of the area; here he advises and cooperates with the crew on drilling, coring, testing, logging; here he keeps his vital records—guide to future development.

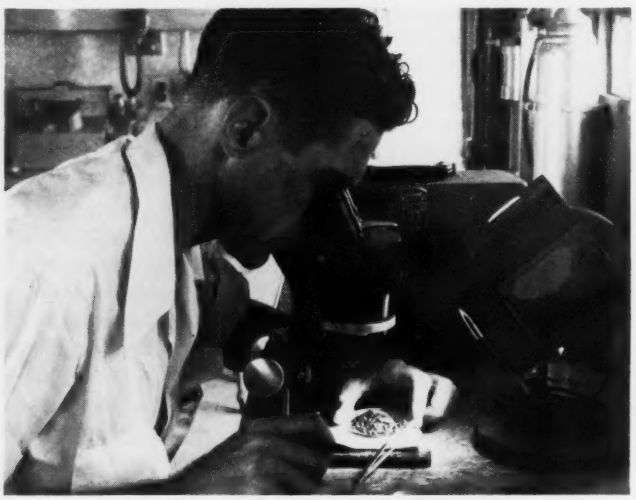
1. Approaching well, production geologist nears end of 45-mile drive from office. He spends most daylight hours "sitting on

2. Checking with driller, geologist gets data on well's progress. He, in turn, gives information on expected drilling conditions.

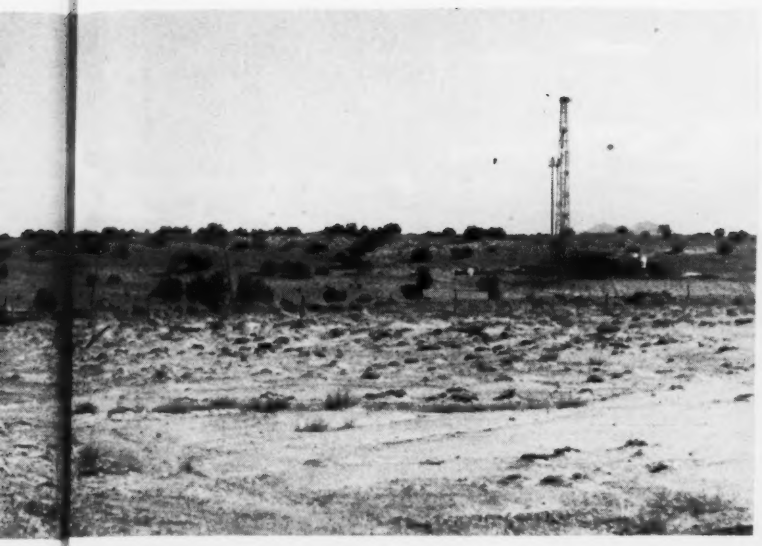


3. Analyzing electric log of the hole, geologist and tool pusher cooperate as usual in making decisions for a drill-stem test.

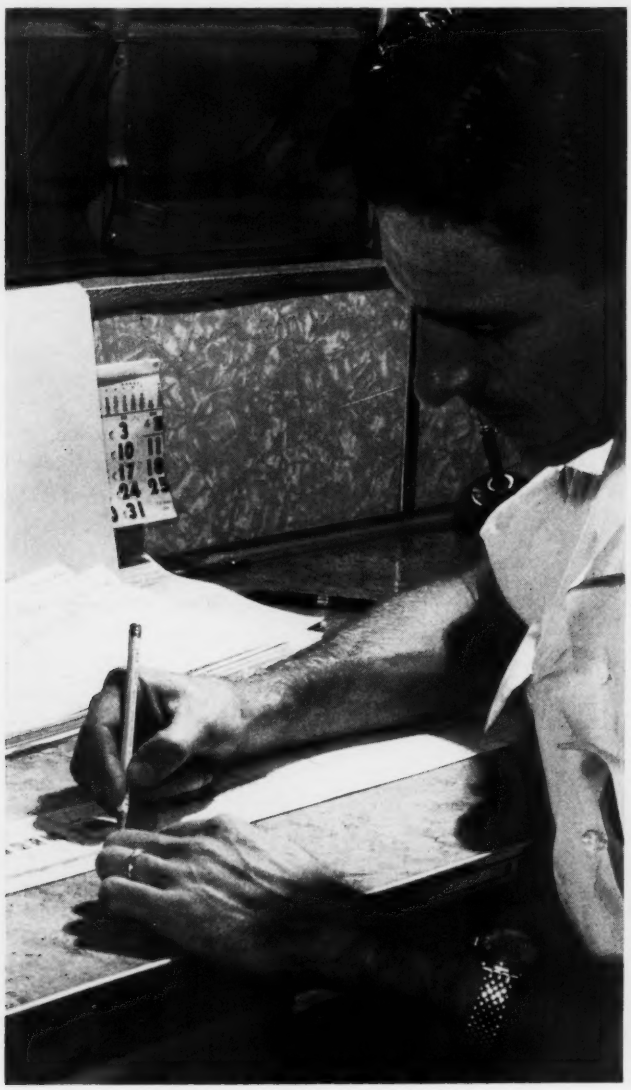
4. Chipping core, geologist prepares to study and identify a sample section from below, check oil and gas possibilities.



5. Examining drill cuttings under microscope, he takes detailed notes on strata being drilled; looks for tell-tale oil stains.



the well"; is on call day or night to check on any change in formation being drilled; remains hours if tests are necessary.



6. Preparing string log—graphic "picture" of the hole—geologist makes a record which will guide future oil search here.

7. Making a drill-stem test, production geologist measures a "show" of gas. All promising formations are put to this test.

8. Catching a few minutes' rest in the doorway of mud-logging unit, geologist awaits results of electric log he requested.

Humble executives accept departmental safety awards on behalf of employees. They are, left to right, David Frame, drilling operations; A. E. Pecore, Humble Pipe Line Company; H. W. Ferguson, Refining Department and Sales Department; Morgan J. Davis, Exploration Department; C. E. Reistle, Jr., Production Department. President Hines H. Baker, right, presented awards.

HUMBLE WINS AWARDS

National Safety Council presents seven plaques to Humble Companies for 1952 safety records

Board chairman L. T. Barrow, right, presents safety award to A. E. Pecore, left, for Humble Pipe Line Company; Hines H. Baker for Humble Oil & Refining Company.

THE National Safety Council's highest award was presented to Humble Oil & Refining Company and Humble Pipe Line Company August 5 for setting a new low in personal injuries suffered on the job.

The Award of Honor, a plaque, was given for a 1952 safety record which was more than 70 per cent better than the previous three-year average.

The plaque is awarded to companies and units of companies which (1) show a reduction of at least 30 per cent in both frequency and severity of personal injuries over the previous three-year period, and (2) show an improvement over the industry-wide safety record for the same period.

In 1952, Humble Safety Division records show, the Humble Companies established a personal injury record which was 74 per cent better in frequency and 72 per cent better in severity than the record of the oil industry and of Humble's own experience in 1949-51.

Six units of the company also received Award of Honor plaques for similar improvements. They are Humble Pipe Line Company, Refining, Wholesale Marketing, Exploration, Drilling, and Production Operations.

PROTECTING THE HAPPY SMILE

Linda Lockett's pretty smile will not be dimmed by excessive fluorides in water she drinks at home in Humble Odessa camp.

A PLEASANT smile—especially one that shows a flash of gleaming white teeth—is a wondrous thing. It radiates happiness and warms the hearts of all who behold it. Such a smile is a valuable asset, well worth safeguarding.

But flashing white teeth are rare in certain parts of Texas. The drinking water in these areas contains excessive amounts of fluorides, causing children's teeth to become permanently discolored. Generations of Texans have grown up in these areas with fluoride-darkened teeth simply because there was no known way to avoid it.

The problem has been of some concern to the Humble Company because many of its employees live in field communities located in such areas. Several years ago the Company set up a committee to make a thorough investigation of the fluoride problem, and to try to find a practical solution.

This has been done.

From the Medical Division's investigations, the committee determined that fluorides do not discolor the teeth of adults or children over about eight years of age. For children under eight, the committee learned, drinking water should not contain more than 1.5 parts per million of fluorides. Concentrations in excess of that will cause discoloration of teeth.

The Medical Division also reported that the water in about 16 of the Company's production camps contained too much fluoride.

How to remove it? The Service Laboratory attacked this problem and soon came up with a key to the answer. Fluorides, it was proved, could be filtered out by running the water through granulated activated bone charcoal.

But to install a filter large enough to treat all the water used in a field community would be costly, and unnecessary. All that was needed was a type of small unit to filter drinking and cooking water in individual homes.

Humble's civil engineers soon devised such a filter unit. It is economical, effective, and easy to install. Basically, the unit is a closed section of 4-inch galvanized pipe filled with activated bone charcoal. The water intake pipe is attached to one end of the unit, and the outlet is at the other, so the water must pass through the charcoal filter.

These units are now available in all field communities where the water contains excessive fluorides. The Company will install a unit in any employee camp residence where there are children eight years of age or younger, and where the parents request it.

To the Humble Company, as to the parents of these children, it is important that those bright smiles continue undimmed.

Drawing filtered water from fluoride removal unit, Mrs. Vernon Lockett prepares to serve her daughters Carolyn and Linda.

Twenty-three employees retire

Their length of service with Humble averages nearly 29 years; combined total is 663 years

TWENTY-THREE long-time employees retiring since the last issue of THE HUMBLE WAY have combined service periods of 663 years. None of this group has less than 24 years' service. Their average length of service is almost 29 years. Roger C. Huder, Sr., cashier in the Treasury Department, and Earl W. Lubbock, disbursement clerk in Pipe Line Accounting, lead this group in amount of service with 34 years each.

HUMBLE PIPE LINE COMPANY

CORNELIUS P. BECKER, field gauger at Odessa, retired July 1 after 25 years' service. He was employed at McCamey as a mechanic. He later transferred to Cooperlea Station, where he worked as oiler, engineer, and field gauger. Mr. Becker likes to travel and fish. He recently purchased a home in Hobbs, New Mexico.

Oiler MARTIN BROWN at Refugio Station retired June 9 with almost 30 years' service. He worked for the Standard Oil Company of Louisiana before joining Humble at Navasota in February, 1924. He has since worked for the Company at Webster, Baytown, Goose Creek, Lorena, Ingleside, Aransas, and Harbor Island. He hopes to do some traveling during his retirement.

JOHN W. CHAPMAN, field gauger who began work with Humble as a laborer, retired July 1 after almost 28 years' service. His special interests include baseball and football. He plans to live in Andrews, Texas, during retirement.

Before retiring August 16, CRAF B. STEPHENS assistant construction foreman at Refugio, spent his vacation in Canada visiting his son who works for Nance Exploration at Maple Creek, Saskatchewan, Canada. Mr. Stephens has more than 27 years' service. He began work for the Company as a laborer and spent his Humble career in North Texas, West Texas, and Southwest Texas divisions. He assisted with the driving of the first piling on the Harbor Island bulkhead and was present when the first oil was loaded aboard a ship at Harbor Island Terminal.

District Gauger JAMES H. CRAWFORD at Alice retired July 3 after 33 years' service. He helped to pioneer oil runs from such well-known fields as Mexia, Corsicana, Refugio, Greta, and Kelsey. He ran the first oil from Kelsey, where he went when the field opened. He remained there until his retirement. Fishing, gardening, and baseball are among his interests that he will pursue in retirement. In addition, he plans to raise fruit trees.

PRODUCTION DEPARTMENT

JAKE R. ALMOND, district chief clerk at Maurbro, retired July 11 after more than 32 years' service. He joined Humble as a timekeeper at Breckenridge, later working as clerk, warehouseman, district chief clerk, and assistant division chief clerk. His special interests include golf and fishing. He owns a home in Seguin, Texas.

Gas Plant Repairman FREDERICK M. BEEBE at Kilgore Gas Plant retired August 5 after 28 years' service. He was employed as gas plant operator at Caddo and later worked as superintendent, engineer, roustabout, repairman, and gas plant repairman first class. He plans to travel some during retirement.

Special interests such as woodwork, mechanical devices, flower culture, and travel will help keep LEMUEL C. BUMPASS, lease pumper-gauger at London, busy during retirement. He retired August 19 with almost 27 years' service. Mr. Bumpass was employed at Powell as yard foreman; he became lease pumper-gauger in 1937.

HENRY L. LAUGHLIN, watchman at Talco, retired July 4 after serving with Humble almost 27 years. Mr. Laughlin is remodeling a house at Chilton, where he will live during retirement. He joined Humble as a helper at Baytown and later worked at Conroe, Pampa, Gladewater, London, and Talco.

JOHN H. SUCKE, district construction foreman at Hawkins, scheduled a trip to Colombia, South America, after his retirement June 4. He plans to be in Columbia, South America, for three months visiting his daughter. After this visit he says he will return and take life easy in the piney woods of East Texas. Mr. Sucke was employed as a tool dresser at Gorman. Later he worked in several other capacities. He was named district construction foreman in March, 1941. He has 33 years' service.

CLYDE SPRAYBERRY, lease pumper-gauger at Hardin, retired August 12 after more than 26 years' service. Employed as a rotary helper at South Liberty, Mr. Sprayberry later worked at Hull, Goose Creek, and Hardin. His special in-

terests include hunting and fishing. He owns a home near Dayton, where he will live during retirement.

JAMES LODDIE TAYLOR, lease pumper-gauger at Gladewater who says "I worked hard for 54 years and I'm 'gonna' do very little from now on," will, nevertheless, build a home near Humble's Gladewater Camp after retiring June 30. Having begun work with Humble on one of its original properties, the Jordan Gully at Moonshine Hill near Humble, Texas, Mr. Taylor has more than 32 years' service with the Company. About his hobbies, he says, "I like gardening and fishing, but I'll quit either one, including eating, to play dominoes."

BAYTOWN REFINERY

Handy Repairman OLLEN P. BAILEY retired June 19 after more than 27 years' service. Mr. Bailey started with the Refinery as a helper in the Pipe Department. His special interest is reading.

CLARENCE M. BULLOCK, relief pumper, retired May 28 after more than 25 years' service. He began work at the Refinery as a helper in the Insulation Department. Later he moved to the Gauging Department. He includes fishing among his special interests.

OCEAN W. HAMILTON, a steam hammer operator since March, 1923, retired July 15 after more than 33 years' service. He served in the Pipe, Blacksmith, and Boilermaker Departments. He will continue his special interests of farming and ranching at his place near Crosby, Texas, during retirement.

ERNEST D. HANEY, compressorman, retired June 12 after more than 25 years' service with Humble. All of his service has been in the Boilermaker Department and Light Ends. After retirement, he hopes to buy a place where he can farm and ranch.

Fireman PHILLIP H. HOLLINGSHEAD retired July 3 after more than 24 years' service. He has worked as a helper, cooling tower tender, and water pumper as well as fireman during his service with the Refinery. He likes gardening, and he expects to make his home at Tarkington Prairie in the next year and do some farming on about 50 acres he owns there.

Starting as a helper in the Boilermaker Department, MARK T. LINDER retired July 11 as a separator-pumper after more than 25 years' service. All of his service has been spent at Baytown Refinery. His special interests include gardening and working around his house.

WILLIAM J. MILNER, shift supervisor, retired June 9 after 31 years' service. He worked for the Refinery as a helper, water drawer, pumper, pump repairman, and supervisor. He likes fishing, gardening, and flower raising, all of which he will pursue during retirement.

PAUL E. SCHROETER, who has been tool inspector since October, 1948, retired July 1, with more than 27 years' service. He began work at the Refinery as a machinist in the Machine Department and later transferred to the Tool and Equipment group: He plans to take care of his home in Yorktown.

HOUSTON OFFICE

Landscaping and horticulture are the chief interests of HENRY C. HASSLER, civil engineer in Civil Engineering, who retired July 1 after 30 years' service with Humble. When the Production Department began landscaping district camps in 1934, he was assigned to do the work. Since 1934 all of his time has been devoted to this type work. During retirement he plans to continue some landscaping in Houston, and he will supervise the maintenance of a few large properties in this area.

ROGER C. HUDER, SR., cashier in the Treasury Department, retired June 5 after more than 34 years' service.

EARL W. LUBBOCK'S entire career with Humble was spent as disbursement clerk in Pipe Line Accounting. In this capacity, he was responsible for processing invoices for payment, and about 2,000,000 invoices amounting close to $1,200,000,000 crossed his desk during his 34 years' service with the Company. Mr. Lubbock is a long-time member of Humble Club, and he has participated in its bowling activities for many years. He likes gardening and travel, and the latter will take up some of his time during retirement. He retired July 11.

DEATHS

SINCE the last issue of THE HUMBLE WAY, 11 active employees and five annuitants have died.

Active employees who have died are: Robert M. Briggs, 53, lease pumper-gauger at Conroe District, on July 16; W. M. Calloway, Jr., 29, draftsman in the East Texas Division, on August 2; Edward O. Everett, 44, senior truck salesman at Eastland Bulk Station, on July 16; Miss Lillian D. Fischer, 36, payroll clerk in the Houston Office, on July 16; George S. Lauraine, 59, helper first at Baytown Refinery, on June 15; Herbert J. McDonald, 47, assistant division chief clerk in the Southwest Texas Division Office, on June 16; Vanard T. McKenzie, 25, rotary helper at Willamar District, on August 2; Clarence E. Meals, 47, salesman in the Northeast Texas Division, on June 6; William A. Scrogum, 43, mechanical supervisor in the East Texas Division, on July 4; Harvey S. Spiller, Sr., 62, engineer at Hearne Pipe Line Station, on July 5; Charles W. York, 29, landman in West Texas Division, on August 2.

Annuitants: Willie C. Doyle, 76, pumper at Holliday District before his retirement, died on June 9; Thomas J. Lawson, 67, bureau head in Production Accounting in the Houston Office, before his retirement, died on August 6; Karl E. Martin, 63, stillman first at Baytown Refinery before his retirement, died July 2; James W. Northrup, 80, equipment inspector at the Houston Bulk Station before his retirement, died June 16; George F. Winterhalter, 69, electrician at Baytown Refinery before his retirement, died July 4.

By the way . . .

R. J. GONZALEZ ELECTED HUMBLE TREASURER

Richard J. Gonzalez has been elected Treasurer of Humble Oil & Refining Company. He succeeds David B. Harris, who resigned that office on July 1, prior to his retirement on August 9.

Mr. Gonzalez is the director in charge of economics and statistics, and has been a member of Humble's Board since 1951. He joined the Company in 1937 and through the years has been engaged in economic and financial matters with which the Company was concerned. He holds a Ph.D. degree in economics from the University of Texas. He is a member of Phi Beta Kappa, the American Economic Association, American Statistical Association, American Academy of Political and Social Science, and American Petroleum Institute.

Richard J. Gonzalez

O. Q. LOMAX COMPLETES THIRTY YEARS

O. Q. Lomax, right, president of Humble Pipe Line Company, is shown here receiving his thirty-year watch from J. A. Neath, Humble Oil & Refining Company vice president and director. Mr. Lomax completed 30 years of service with Humble on June 27, 1953.

DR. FISK WINS AWARD

Dr. Harold N. Fisk, head of Humble's geologic research section, has been awarded the James Laurie Prize by the American Society of Civil Engineers for his technical paper, "Mississippi River Valley Geology-Relation to River Regime." Presentation of this and other awards will be made at the society's national convention in New York, Oct. 19-24.

HICKS AND BAUGH AT HICKSBAUGH

Bob Hicks and Jack Baugh pause beside a sign pointing to Humble's Hicksbaugh Field in Tyler County, Texas. This snapshot, taken last summer, shows the two Lovell Lake District petroleum engineers on their way to supervise running of oil string casing for Humble's William Rice Institute B-3 in the Hicksbaugh Field. The arrow underlining the baugh in Hicksbaugh, naturally, points to Baugh.

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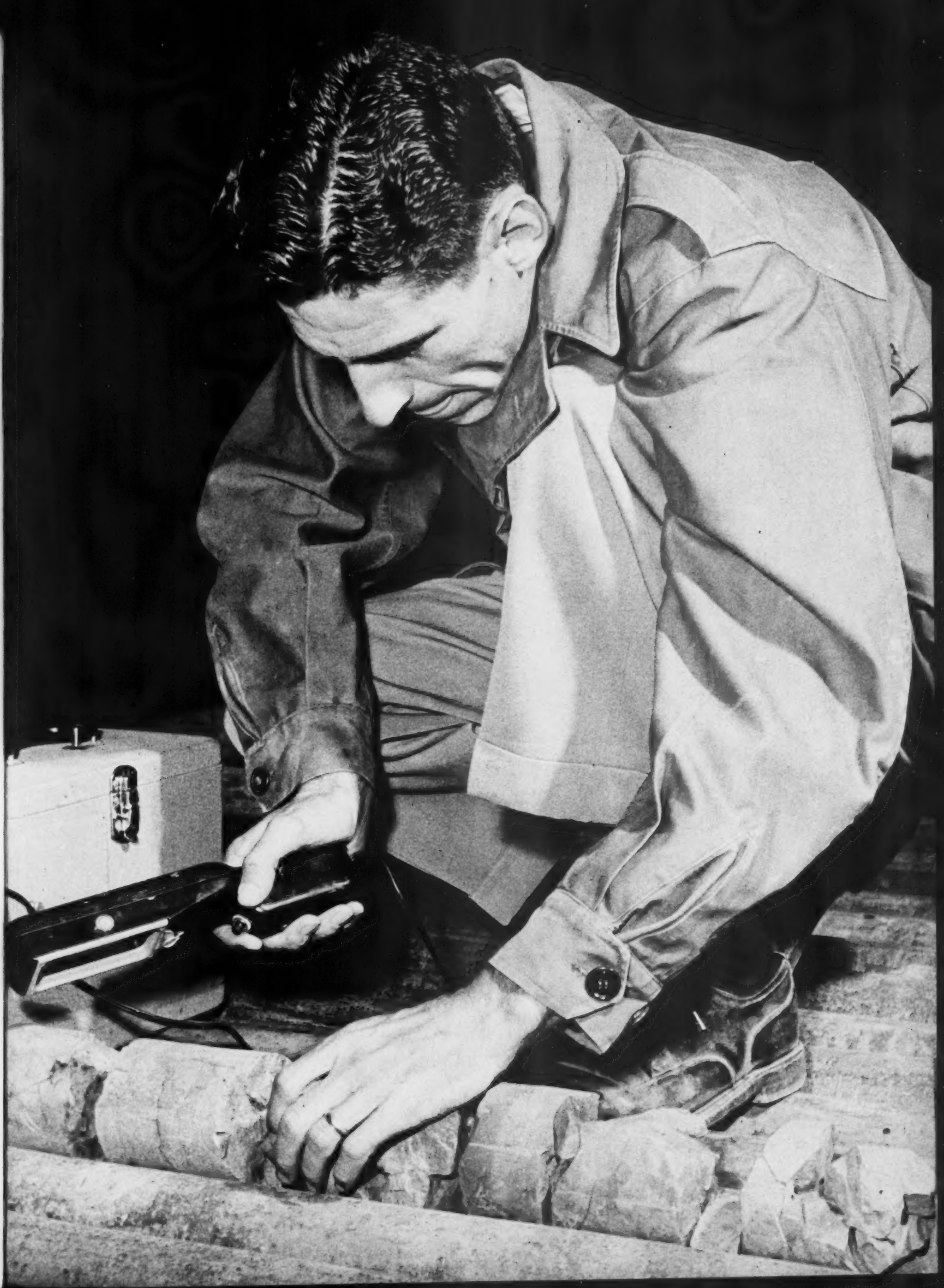
Production geologist uses ultra-violet light to make on-the-spot examination of a core immediately after it is taken from hole. (See page 17.)



The mobile community shown in this painting by Artist E. M. Schiwetz is headquarters for a Humble seismograph crew on the King Ranch. In the background, framed between two mesquite trees, are stacks of golden hay and a typical ranch windmill.

In seismograph exploration, a small charge of dynamite is exploded in a shallow hole drilled for that purpose every 1200 to 1500 feet. The explosion creates an artificial earthquake whose vibrations are recorded on photographic film. Geophysicists study and interpret these vibration patterns to determine what structures may lie below.

During the past 15 years or so, virtually all acreage under lease on the King Ranch has been "shot" with the seismograph. This exploration crew, using improved equipment and new techniques, is going back over the ranch, taking a second look at some areas which seemed promising during the first round of seismograph work.